

15 September 1960

IMPLICATION TO PAYLOAD OF
VEHICLE MODIFICATION TO FAST OPERATION

SUMMARY

As regards the payload, there are only two physical effects which result from the proposed vehicle modification to fast operation: A 10% increase in V/H; and a 125°F increase in maximum temperature of the outermost glazing surface. The first does not involve any change of schedule or costs while the second might.

V/H

The V/H change percentage has been known precisely for some time, has been accommodated in the design, and represents no burden at all in regard to design or fabrication. That is, the internal system operation satisfactory for the slow vehicle is completely satisfactory for the fast vehicle, so no changes are required. (The necessity to use an analog voltage proportional to the vehicle velocity in some of the servo loops represents a very minor sort of consideration in that adjustable circuit elements will have to be used in a few places where they perhaps would not have been used if the system only had to accommodate one vehicle velocity. For instance, trim pot resistors may have to be used instead of fixed resistors in a few places.)

WINDOW TEMPERATURE

The exact value of the temperature rise on the outer glazing surface was not known until recently, but is not substantially different from early estimates. However, development effort until now is centered entirely on finding a window configuration suitable for the lower temperature (i.e.: 500 to 550°F).

The anticipated higher temperature results in two problems: The vacuum seal development for the lower temperature may not work for the higher temperature; and the heat load from the window into the bay will be greatly different perhaps. Since we have not yet made a satisfactory vacuum seal for the lower temperature condition, at this time it is impossible to predict schedule and cost implications of a vehicle modification to faster operation. We are at work on several methods for obtaining

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the vacuum seal, at least one of which might work for both external temperature regions. Consequently, if that particular seal was found to be satisfactory, then we would be able to use it without any loss of time or increase in costs. However, if a vacuum seal method for lower temperature was first developed, we would not have to proceed any further if our solution had only to be applied to the slow operation of the vehicle.

The implications of the heat load through the window is almost impossible to assess at this time. It might be that the heat flow through a window developed for the low temperature operation would be sufficiently small in that operation as to be no problem but would be objectionably large for the higher temperature operation.

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